

US EPA ARCHIVE DOCUMENT



**DRAFT ROUND 10 DAM ASSESSMENT REPORT  
NIPSCO DH MITCHELL GENERATING STATION  
COAL ASH IMPOUNDMENTS**

**NOVEMBER 11, 2011**

**PREPARED FOR:**



**U.S. Environmental Protection Agency  
1200 Pennsylvania Avenue, NW  
Washington, DC 20460**

**PREPARED BY:**



**GZA GeoEnvironmental, Inc.  
19500 Victor Parkway, Suite 300  
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GZA File No. 01.0170142.30**

***DRAFT***

November 11, 2011  
File No. 01.0170142.30



Mr. Stephen Hoffman  
U. S. Environmental Protection Agency  
1200 Pennsylvania Avenue, NW  
Washington, DC 20460

Re: Round 10 Dam Assessment - Draft Report  
EPA Contract No. EP10W001313  
NIPSCO – DH Mitchell Generating Station  
Coal Ash Impoundments  
Gary, Indiana

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Norwood, MA 02062  
781-278-3700  
FAX 781-278-5701  
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Dear Mr. Hoffman:

In accordance with our proposal 01.P000177.11, dated March 28, 2011, and U.S. Environmental Protection Agency (EPA) Contract No. EP10W001313, Order No. EP-B11S-00049, GZA GeoEnvironmental, Inc. (GZA) has completed our inspection of the Northern Indiana Public Service Company (NIPSCO) DH Mitchell Generating Station (Site) Coal Ash Impoundments located in Gary, Indiana. The Site visit was conducted on May 23, 2011. The purpose of our efforts was to provide the EPA with a Site-specific evaluation of the impoundments to assist EPA in assessing the structural stability of the impoundments under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act Section 104(e). We are submitting one hard copy and one CD-ROM copy of this Draft Report directly to the EPA.

Based on our visual inspection, and in accordance with the EPA's criteria, the Site's Coal Ash Impoundments are currently in **SATISFACTORY** condition, in our opinion. Further discussion of our evaluation and recommended actions are presented in the Round 10 Dam Assessment Report. The report includes: (a) completed Field Assessment Checklists; (b) figures of the impoundments; and (c) selected photographs with captions. Our services and report are subject to the Limitations found in **Appendix A** and the Terms and Conditions of our contract agreement.

We are happy to have been able to assist you with this assessment and appreciate the opportunity to continue to provide you with dam engineering consulting services. Please contact the undersigned if you have any questions or comments regarding the content of this Round 10 Dam Assessment Report.

Sincerely,

GZA GEOENVIRONMENTAL, INC.

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Principal  
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**DRAFT REPORT**

US EPA ARCHIVE DOCUMENT



## EXECUTIVE SUMMARY

This Dam Assessment Report presents the results of a visual evaluation of the Northern Indiana Public Service Company, DH Mitchell Generating Station (DHMGS, Site) coal ash impoundments located in Gary, Indiana. The inspection was performed on May 25, 2011, by representatives of GZA GeoEnvironmental, Inc (GZA), accompanied by representatives of NIPSCO.

The DHMGS ceased operation in 2002 and is being scheduled for deconstruction by NIPSCO.

At the Site, there were six separate coal ash impoundments (collectively called the DHMGS Impoundments) including: Primary Settling Basin No. 1, Primary Settling Basin No. 2, Secondary Settling Basin No. 1, Secondary Settling Basin No. 2, Primary Settling Basin No. 3, and Primary Settling Basin No. 4. With the exception of Primary Settling Basin No. 4, each of the Impoundments were breached following plant shutdown in 2002 and no longer contain liquids with the exception of small volumes of precipitation. Primary Settling Basin No. 4 is incised and does not meet U.S. Army Corps of Engineers (COE) or Indiana Department of Natural Resources (IDNR) criteria to be classified as a dam. As such, they were not assigned a size rating. Additionally, since the DHMGS Impoundments do not meet the minimum requirements to be considered a dam, the IDNR has not assigned them a hazard potential rating.

Under the EPA hazard rating classification system and based on the fact the Impoundments have been breached, it is GZA's opinion that the Impoundments would each be considered as having a less than **Low** hazard potential.

Since each of the DHMGS Impoundments has been breached and Primary Settling Basin No. 4 is incised, no further research or remedial recommendations are necessary.

## PREFACE



The assessment of the general condition of the embankment at the Northern Indiana Public Service Company, DH Mitchell Generating Station located in Gary, Indiana is based upon available data and visual inspections. Detailed investigations and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of this report.

In reviewing this report, it should be realized that the reported condition of the embankment is based on observations of field conditions at the time of inspection, along with data available to the inspection team. In cases where an impoundment is lowered or drained prior to inspection, such action, while improving the stability and safety of the embankment, removes the normal load on the structure and may obscure certain conditions, which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is critical to note that the condition of the embankment depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the embankment will continue to represent the condition of the embankment at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

Prepared by:

GZA GeoEnvironmental, Inc.

**Walter Kosinski, P.E.**

Principal

Indiana License No.: PE10201153

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COAL ASH IMPOUNDMENTS  
NIPSCO – DH MITCHELL GENERATING STATION  
GARY, INDIANA



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COAL ASH IMPOUNDMENTS  
NIPSCO – DH MITCHELL GENERATING STATION  
GARY, INDIANA

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## 1.0 DESCRIPTION OF PROJECT

### 1.1 General

#### 1.1.1 Authority



The United States Environmental Protection Agency (EPA) has retained GZA GeoEnvironmental, Inc. (GZA) to perform a visual assessment and develop a report of conditions for the Northern Indiana Public Service Company (NIPSCO, Owner), a division of NiSource, DH Mitchell Generating Station (DHMCS, Site) coal ash impoundments (Impoundments) located in Gary, Indiana. This evaluation was authorized by the EPA under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 104(e). This assessment and draft report were performed in accordance with Round 10 of the Assessment of Dam Safety of Coal Combustion Surface Impoundments, RFQ-DC-16, dated March 16, 2011, and EPA Contract No. EP10W001313, Order No. EP-B11S-00049. The assessment generally conformed to the requirements of the Federal Guidelines for Dam Safety<sup>1</sup>, and this report is subject to the limitations contained in **Appendix A** and the Terms and Conditions of our Contract Agreement.

#### 1.1.2 Purpose of Work

The purpose of this assessment was to visually assess and evaluate the present condition of the Impoundments and appurtenant structures to attempt to identify conditions that may adversely affect their structural stability and functionality, to note the extent of any deterioration that may be observed, review the status of maintenance and needed repairs, and to evaluate the conformity with current design and construction standards of care.

The assessment was divided into five parts: 1) obtain and review available reports, investigations, and data from the Owner pertaining to the impoundments and appurtenant structures; 2) perform an on-Site review with the Owner of available design, inspection, and maintenance data and procedures for the Impoundments; 3) perform a visual assessment of the Site; 4) prepare and submit a field assessment checklist; and, 5) prepare and submit a draft and a final report presenting the evaluation of the Impoundments, including recommendations and proposed remedial actions.

#### 1.1.3 Definitions

To provide the reader with a better understanding of the report, definitions of commonly used terms associated with dams are provided in **Appendix B**. Some of these terms may be included within this report. The terms are presented under common categories associated with dams which include: 1) orientation; 2) dam components; 3) size classification; 4) hazard classification; 5) general; and, 6) condition rating.

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<sup>1</sup> FEMA/ICODS, April 2004: <http://www.ferc.gov/industries/hydropower/safety/guidelines/fema-93.pdf>



## 1.2 Description of Project

### 1.2.1 Location



The DHMGS is located on the shores of Lake Michigan about four miles northwest of Gary, Indiana, at the address 1 North Clark Road, Gary, Indiana 46406. The Impoundments are located less than a mile north of the DHMGS at latitude 41° 38' 23" North and longitude 87° 24' 18" West. A Site locus map of the DHMGS, Impoundments, and surrounding area is shown on **Figure 1**. An aerial photograph of the DHMGS, Impoundments, and surrounding area is provided as **Figure 2**.

### 1.2.2 Owner/Caretaker

The Impoundments are owned and operated by NIPSCO, a wholly owned division of NiSource.

	Dam Owner/Caretaker
Name	NIPSCO, Michigan City Generating Station
Mailing Address	101 Wabash Street
City, State, Zip	Michigan City, Indiana 46360
Contact	Greg Costakis
Title	Manager - Environmental Services
E-Mail	gcostakis@nisource.com
Phone Number	(219) 956-5125

### 1.2.3 Purpose of the Impoundments

The DHMGS began commercial operation in 1956 and ceased operation in 2002. The DHMGS was a four-unit coal-fired power plant with a gross generating capacity of approximately 533 megawatts. The Impoundments were constructed for the purpose of storing and disposing coal combustion byproducts. Primary Settling Basin No. 1 (Primary No. 1), Primary Settling Basin No. 2 (Primary No. 2), Secondary Settling Basin No. 1 (Secondary No. 1), and Secondary Settling Basin No. 2 (Secondary No. 2) began operation in 1956. Primary Settling Basin No. 3 (Primary No. 3) began operation in 1969, and Primary Settling Basin No. 4 (Primary No. 4) began operation in 1981. In 1979, the DHMGS switched to a dry fly ash handling system. The Impoundments were utilized from the time they were constructed up to 2002 and they have not received liquids other than direct precipitation since that time. With the exception of Primary No. 4, which is incised, the embankments have been breached to facilitate the deconstruction of the Impoundments.

Wastewater discharged from the Site was regulated under one National Pollution Discharge Elimination System (NPDES) permit. All of the wastewater discharged to the Impoundments was discharged through the NPDES outlet to Lake Michigan. According to the site operator, no wastewater discharge has occurred since 2002.



#### 1.2.4 Description of the Impoundments and Appurtenances

The following description of the Impoundments is based on the Owner interviews and filed observations by GZA. No design information or reports or as-built drawings were available to GZA.

As shown on **Figures 2 and 3**, there are six separate impoundments: Primary No. 1, Secondary No. 1, Primary No. 2, Secondary No. 2, Primary No. 3, and Primary No. 4.

In general, wastewater flowed through the Impoundments by gravity from the Primary Impoundments to the Secondary Impoundments, after which it was discharged to the NPDES Outfall by gravity. According to NIPSCO, Primary No. 1, Primary No. 2, and Primary No. 3 each received bottom ash and fly ash sluice. Primary No. 4 received only bottom ash sluice. Secondary No. 1 and Secondary No. 2 received discharge water from each of the primary impoundments.

Based on GZA's observations, it appeared that the Impoundments were constructed on the natural ground surface and fill. NIPSCO estimated the maximum height of the embankments to be between nine and twelve feet above the existing grade. Since the embankments appear to have been constructed on the natural ground surface, the structural height is approximately the same as the maximum height. Based on the locations where the cross section of the embankments could be observed, it appeared that they were constructed with compacted sand and ash material. There was no lining beneath the Impoundments.

Primary No. 1, Secondary No. 1, Primary No. 2, and Secondary No. 2 consist of an embankment with a crest length of approximately 2,100 feet. Primary No. 3 consists of an embankment with a crest length of approximately 1,600 feet. Primary No. 4 is completely incised. Design information, including elevation, slope grade, compaction ratios, decant inlet elevations, emergency overflow piping, and number of decant structures were not available. The Impoundments were not expanded after they were constructed and have not been utilized since operations ceased in 2002.

Instrumentation at the Impoundments includes several monitoring wells that are no longer utilized.

#### 1.2.5 Operations and Maintenance of the Impoundments

According to NIPSCO, the Impoundments continue to be visually inspected biannually. The DHMGS and the Impoundments have not been operational since 2002 and are scheduled for deconstruction. NIPSCO reportedly was negotiating a consent agreement with U.S. EPA for the deconstruction.



### 1.2.6 Size Classification

For the purposes of this EPA-mandated inspection, the size classifications are based on United States Army Corps of Engineers (COE) criteria. According to guidelines established by the COE, dams with a storage volume less than 1,000 acre-feet and/or a height less than 40 feet are classified as Small sized structures. Based on their respective maximum heights and storage volumes (refer to Section 1.3), each of the Impoundments were classified as a **Small** sized structures. It is noted that the Indiana Department of Natural Resources (IDNR) does not regulate size criteria for dams.

### 1.2.7 Hazard Potential Classification

Given that the Impoundments do not meet the definition of a dam in the State of Indiana and are therefore not regulated by the IDNR, the IDNR has not assigned them a hazard potential rating. Under the EPA classification system, as presented in the Definitions section (**Appendix B**) and on page 2 of each EPA checklist (**Appendix C**), it is GZA's opinion that the Impoundments would be considered as having a **Less than Low** hazard potential. This hazard potential rating was assigned because the DHMGS has been shut down since 2002, the Impoundments have been breached, which severely restricts their ability to impound water, and they are scheduled for deconstruction and permanent retirement. A failure or mis-operation of these Impoundments would result in no probable loss of human life or economic or environmental losses, in GZA's opinion.

### 1.3 Pertinent Engineering Data

The Impoundments are located near Lake Michigan and are approximately bordered by the Carmeuse Lime plant to the west, the Praxair plant to the south, Lake Michigan to the north and east, and U.S. Steel to the east. Soil boring logs, as-built drawings, and construction specifications were not available.

The size, capacity, and former storage volume of each Impoundment based on information provided by NIPSCO<sup>2</sup> are included in the following table.

Impoundment	Size (Acres)	Total Storage Capacity (Cubic Yards)	Current Material Storage Volume (Cubic Yards)
Primary No. 1	1.4	36,000	<100
Secondary No. 1	0.52	4,200	<50
Primary No. 2	1.7	50,000	5,000
Secondary No. 2	0.48	3,900	<50
Primary No. 3	1.9	50,200	5,000
Primary No. 4	2.3	55,000	10,000

<sup>2</sup> NIPSCO Response to EPA Information Request for Information for the DH Mitchell Generating Station, October 4, 2010.



### 1.3.1 Drainage Area

With the exception of Primary No. 4, which is incised, the Impoundments were enclosed embankments built up from the natural ground surface. As such, the contributory drainage area is the surface area of the Impoundments, having an aggregate area of approximately 15 acres. However, because the impoundments have been breached, they do not retain appreciable amounts water.

### 1.3.2 Discharges at the Site

Discharges at the Site were regulated under the previously noted NPDES Permit. However, according to NIPSCO, the NPDES outfall was removed in 2010 and there are no other known discharges from the Site.

### 1.3.3 General Elevations

Impoundment elevations were not available to GZA.

### 1.3.4 Design and Construction Records and History of the Impoundments

Design and construction records were not available to GZA. Primary No. 1, Primary No. 2, Secondary No. 1, and Secondary No. 2 began operation in 1956. Primary No. 3 began operation in 1969, and Primary No. 4 began operation in 1981. In 1979, the DHMGS switched to a dry fly ash handling system. The Impoundments were utilized from the time they were constructed to 2002. With the exception of Primary No. 4, which is incised, the embankments have been breached in order to facilitate the deconstruction of the Impoundments.

### 1.3.5 Operating Records

Minimal operating records were recorded by DHMGS personnel and were not available to GZA at the time of the assessment.

### 1.3.6 Previous Inspection Reports

According to NIPSCO personnel, no previous inspection reports regarding the structural stability of the Impoundments were completed.

## 2.0 INSPECTION

### 2.1 Visual Inspection

The Impoundments were evaluated on May 25, 2011 by Walter Kosinski, P.E., and Thomas Boom, P.E., of GZA. The weather was mostly cloudy with temperatures in the 60°s to 70°s Fahrenheit. Underwater areas were not inspected as this level of investigation was beyond GZA's scope of services. A copy of the EPA Checklist for each Impoundment is included in **Appendix C**. Photographs to document the current conditions of the Impoundments were taken during the inspection and are included in **Appendix D**. With respect to our visual evaluation, there was no evidence of prior releases, failures, or previous embankment repairs observed by GZA.



### 2.1.1 General Findings

Given that the Impoundments have been not been operational since 2002, the embankments have been breached, and are scheduled for deconstruction, a condition rating was not assigned. General observations are identified in more detail in the sections below.

An overall plan showing the pertinent features, including the location and orientation of photographs provided in **Appendix D**, is detailed on **Figure 3**.

### 2.1.2 Primary No. 1, Primary No. 2, Secondary No. 1, and Secondary No. 2 (Photo Nos. 1 through 11)

One embankment surrounds Primary No. 1, Primary No. 2, Secondary No. 1, and Secondary No. 2. Interim embankments were constructed to separate the impoundments. The crest of the embankment between the impoundments formerly functioned as a gravel road. With the exception of the locations where the embankment was breached (refer to Figure 3 for the breach locations), the embankment appeared to be stable. Large trees up to 15-inch diameter were growing on the embankments. Thick vegetation was growing on the embankments and within the impoundments. The majority of the interior and exterior slope could not be observed due to the vegetation growth. Some water from precipitation was noted in Primary No. 1. There were some areas where minimal vegetation was present due to remaining ash residue. Some of the discharge and transfer structures were observed and it was evident that they have not been operational for some time.

The embankment was breached in at least four locations such that these four impoundments can no longer contain water. Since the impoundments are not lined, the majority of precipitation that enters the impoundments appears to infiltrate the ground.

### 2.1.3 Primary No. 3 (Photo Nos. 12 through 14)

Primary No. 3 is separate from Primary No. 1, Primary No. 2, Secondary No. 1, and Secondary No. 2. With the exception of the location where the embankment was breached (refer to Figure 3 for the breach locations), the embankment appeared to be stable. Large trees up to 15-inch diameter were growing on the embankments. Thick vegetation was growing on the embankments and within the impoundments. The majority of the interior and exterior slope could not be observed due to the vegetation growth. The embankment was breached in at least one location such that Primary No. 3 can no longer contain water. Since this impoundment is not lined, the majority of precipitation that enters Primary No. 3 appears to infiltrate the ground.

### 2.1.4 Primary No. 4 (Photo Nos. 15 through 23, 47, 48, and 49)

Primary No. 4 is separate from Primary No. 1, Primary No. 2, Secondary No. 1, Secondary No. 2, and from Primary No. 3. Primary No. 4 is incised. Large trees up to 15-inch diameter were growing on the embankments. Thick vegetation was growing on the embankments and within this impoundment. The majority of the interior and exterior slope could not be observed due to the vegetation growth. Some water was noted in Primary No. 4. Since this impoundment is not lined, the majority of precipitation that enters Primary No. 4 appears to infiltrate the ground.



## 2.2 Caretaker Interview

Maintenance of the Impoundments is the responsibility of NIPSCO personnel. As detailed in previous sections, GZA met with NIPSCO personnel and discussed the operations and maintenance procedures, regulatory requirements, and the history of the Impoundments since they were constructed and decommissioned.

## 2.3 Operation and Maintenance Procedures

As discussed in Section 1.2.5, according to NIPSCO, the Impoundments are visually inspected biannually. The DHMGS and the Impoundments have not been operational since 2002 and are scheduled for deconstruction. There are no formal operation and maintenance procedures related to the structural integrity of the Impoundments.

## 2.4 Emergency Action Plan

There is no Emergency Action Plan (EAP) developed for the Impoundments. An EAP is not required under Indiana regulations.

## 2.5 Hydrologic/Hydraulic Data

GZA did not perform an independent assessment of the hydraulics and hydrology for the embankments as this was beyond our scope of services. There was minimal water in the Impoundments during the GZA evaluation.

## 2.6 Structural and Seepage Stability

The original structural and seepage stability analyses, if any, were not available to GZA at the time of inspection. Slope stability analyses, seepage analyses, foundation liquefaction analyses, and settlement analyses reports were not available.

# 3.0 ASSESSMENTS AND RECOMMENDATIONS

## 3.1 Assessments

Given that the Impoundments have been not been operational since 2002, the embankments have been breached, and are scheduled for deconstruction, a condition rating was not assigned.

Additionally, since the Impoundments have been breached, they are severely restricted in their ability to impound water. In the unlikely event the Impoundments will be reused in the future, the embankments will need to be redesigned, reconstructed, and reevaluated for stability prior to adding any water to the Impoundments.

Given that the Impoundments have not been operational since 2002 and that they are scheduled for deconstruction, GZA has no recommendations.



#### 4.0 ENGINEER'S CERTIFICATION



I acknowledge that the management units referenced herein, the DH Mitchell Generating Station Impoundments, have been assessed on May 25, 2011. They were not assigned a condition rating because they have been not been operational since 2002, the embankments have been breached, and the DHMGS and Impoundments are scheduled for deconstruction.

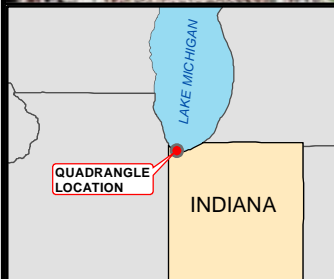
Walter Kosinski, P.E.  
Principal

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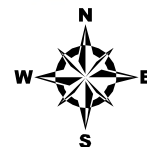


**Figures**



SOURCE : This map contains the ESRI ArcGIS Online World Topographic Map service, published February 2011 by ESRI ARCIMS Services. The service was compiled to uniform cartography using a variety of best available sources from several data providers.

Data Supplied by :



PROJ. MGR.: TRB  
DESIGNED BY: TRB  
REVIEWED BY: PHB  
OPERATOR: GAS/EMD

DATE: 09-07-2011

LOCUS PLAN  
(USGS TOPOGRAPHIC QUAD)

NIPSCO DH MITCHELL GENERATING STATION  
1 NORTH CLARK ROAD  
GARY, INDIANA

JOB NO.  
01.0170142.30

FIGURE NO.  
1

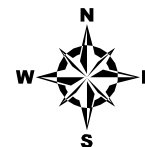


LAKE MICHIGAN



SOURCE : This map contains the ESRI ArcGIS Online World Imagery Map service, published February 2011 by ESRI ARCIMS Services. The service was compiled to uniform cartography using a variety of best available sources from several data providers.

Data Supplied by :



PROJ. MGR.: TRB  
DESIGNED BY: TRB  
REVIEWED BY: PHB  
OPERATOR: GAS/EMD  
DATE: 09-07-2011

LOCUS PLAN  
(DIGITAL ORTHOPHOTO/AERIAL IMAGERY)  
NIPSCO DH MITCHELL GENERATING STATION  
1 NORTH CLARK ROAD  
GARY, INDIANA



JOB NO.  
01.0170142.30  
FIGURE NO.  
2



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LAKE MICHIGAN

- LEGEND**
-  PHOTO LOCATION / DIRECTION
  -  BREACH LOCATION



**SOURCE:** This map contains the ESRI ArcGIS Online Data Supplied by :  
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ESRI ARCMIS Services. The service was compiled to  
uniform cartography using a variety of best available sources  
from several data providers.

0 100 200 400  
SCALE IN FEET

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NIPSCO DH MITCHELL GENERATING STATION  
1 NORTH CLARK ROAD  
GARY, INDIANA

**BREACH LOCATIONS  
AND PHOTOLOG**

PREPARED BY:  <b>GZA</b> GeoEnvironmental, Inc. Engineers and Scientists www.gza.com			PREPARED FOR: 
PROJ MGR: TRB	REVIEWED BY: PHB	CHECKED BY: TRB	FIGURE 3
DESIGNED BY: TRB	DRAWN BY: GAS	SCALE: 1 in = 200 ft	
DATE: 09/07/2011	PROJECT NO. 01.0170142.30	REVISION NO.	





## Appendix A

### Limitations

## DAM ENGINEERING & VISUAL INSPECTION LIMITATIONS

1. The observations described in this report were made under the conditions stated herein. The conclusions presented in the report were based solely on the services described therein, and not on scientific tasks or procedures beyond the scope of described services or the time and budgetary constraints imposed by the United States Environmental Protection Agency (EPA).
2. In preparing this report, GZA GeoEnvironmental, Inc. (GZA) has relied on certain information provided by the Northern Indiana Public Service Company (NIPSCO) as well as Federal, state, and local officials and other parties referenced therein. GZA has also relied on certain information contained on the State of Indiana's website as well as Federal, state, and local officials and other parties which were available to GZA at the time of the inspection. Although there may have been some degree of overlap in the information provided by these various sources, GZA did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of this work.
3. In reviewing this Report, it should be noted that the reported condition of the Ash Pond is based on observations of field conditions during the course of this study along with data made available to GZA. The observations of conditions at the Ash Pond reflect only the situation present at the specific moment in time the observations were made, under the specific conditions present. It may be necessary to reevaluate the recommendations of this report when subsequent phases of evaluation or repair and improvement provide more data.
4. It is important to note that the condition of a dam or embankment depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam or embankment will continue to represent the condition of the dam or embankment at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions may be detected.
5. Water level readings have been reviewed and interpretations have been made in the text of this report. Fluctuations in the level of the groundwater and surface water may occur due to variations in rainfall, temperature, and other factors different than at the time measurements were made.
6. GZA's comments on the history, hydrology, hydraulics, and embankment stability for the impoundments are based on a limited review of available design documentation for the NIPSCO facility. Calculations and computer modeling used in these analyses were not available and were not independently reviewed by GZA.
7. This report has been prepared for the exclusive use of EPA for specific application to the existing dam facilities, in accordance with generally accepted dam engineering practices. No other warranty, express or implied, is made.
8. This dam inspection verification report has been prepared for this project by GZA. This report is for broad evaluation and management purposes only and is not sufficient, in and of itself, to prepare construction documents or an accurate bid.



## **Appendix B**

### Definitions



## COMMON DAM SAFETY DEFINITIONS

For a comprehensive list of dam engineering terminology and definitions refer to references published by the U.S. Army Corps of Engineers, the Federal Energy Regulatory Commission, the Department of the Interior Bureau of Reclamation, or the Federal Emergency Management Agency.

### Orientation

Upstream – Shall mean the side of the dam that borders the impoundment.

Downstream – Shall mean the high side of the dam, the side opposite the upstream side.

Right – Shall mean the area to the right when looking in the downstream direction.

Left – Shall mean the area to the left when looking in the downstream direction.

### Dam Components

Dam – Shall mean any artificial barrier, including appurtenant works, which impounds or diverts water.

Embankment – Shall mean the fill material, usually earth or rock, placed with sloping sides, such that it forms a permanent barrier that impounds water.

Crest – Shall mean the top of the dam, usually provides a road or path across the dam.

Abutment – Shall mean that part of a valley side against which a dam is constructed. An artificial abutment is sometimes constructed as a concrete gravity section, to take the thrust of an arch dam where there is no suitable natural abutment.

Appurtenant Works – Shall mean structures, either in dams or separate there from, including but not be limited to, spillways; reservoirs and their rims; low level outlet works; and water conduits including tunnels, pipelines, or penstocks, either through the dams or their abutments.

Spillway – Shall mean a structure over or through which water flows are discharged. If the flow is controlled by gates or boards, it is a controlled spillway; if the fixed elevation of the spillway crest controls the level of the impoundment, it is an uncontrolled spillway.

### General

EAP – Emergency Action Plan - Shall mean a predetermined plan of action to be taken to reduce the potential for property damage and/or loss of life in an area affected by an impending dam break.

O&M Manual – Operations and Maintenance Manual; Document identifying routine maintenance and operational procedures under normal and storm conditions.

Normal Pool – Shall mean the elevation of the impoundment during normal operating conditions.

Acre-foot – Shall mean a unit of volumetric measure that would cover one acre to a depth of one foot. It is equal to 43,560 cubic feet. One million U.S. gallons = 3.068 acre feet.

Height of Dam – Shall mean the vertical distance from the lowest portion of the natural ground, including any stream channel, along the downstream toe of the dam to the crest of the dam.

Spillway Design Flood (SDF) – Shall mean the flood used in the design of a dam and its appurtenant works particularly for sizing the spillway and outlet works, and for determining maximum temporary storage and height of dam requirements.

### Condition Rating

**SATISFACTORY** - No existing or potential management unit safety deficiencies are recognized. Acceptable performance is expected under all applicable loading conditions (static, hydrologic, seismic) in accordance with the applicable criteria. Minor maintenance items may be required.

**FAIR** - Acceptable performance is expected under all required loading conditions (static, hydrologic, seismic) in accordance with the applicable safety regulatory criteria. Minor deficiencies may exist that require remedial action and/or secondary studies or investigations.

**POOR** - A management unit safety deficiency is recognized for any required loading condition (static, hydrologic, seismic) in accordance with the applicable dam safety regulatory criteria. Remedial action is necessary. POOR also applies when further critical studies or investigations are needed to identify any potential dam safety deficiencies.

**UNSATISFACTORY** - Considered unsafe. A dam safety deficiency is recognized that requires immediate or emergency remedial action for problem resolution. Reservoir restrictions may be necessary.

### Hazard Potential

(In the event the impoundment should fail, the following would occur):

**LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

**LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

**SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

**HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.



**Appendix C**  
Inspection Checklists



Site Name:	D.H. Mitchell Generating Station	Date:	May 25, 2011
Unit Name:	Primary 1	Operator's Name:	NIPSCO
Unit I.D.:	N/A	Hazard Potential Classification:	High Significant Low LTL
Inspector's Name: Walter Kosinski, P.E. & Thomas Boom, P.E.			

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?		N/A	18. Sloughing or bulging on slopes?		
2. Pool elevation (operator records)?		N/A	19. Major erosion or slope deterioration?		
3. Decant inlet elevation (operator records)?		N/A	20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?		N/A	Is water entering inlet, but not exiting outlet?		
5. Lowest dam crest elevation (operator records)?		See Note	Is water exiting outlet, but not entering inlet?		
6. If instrumentation is present, are readings recorded (operator records)?			Is water exiting outlet flowing clear?		
7. Is the embankment currently under construction?		✓	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation, stumps, topsoil in area where embankment fill will be placed)?			From underdrain?		
9. Trees growing on embankment? (If so, indicate largest diameter below)	✓		At isolated points on embankment slopes?		
10. Cracks or scarps on crest?		✓	At natural hillside in the embankment area?		
11. Is there significant settlement along the crest?		✓	Over widespread areas?		
12. Are decant trashracks clear and in place?			From downstream foundation area?		
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		✓	"Boils" beneath stream or ponded water?		
14. Clogged spillways, groin or diversion ditches?		✓	Around the outside of the decant pipe?		
15. Are spillway or ditch linings deteriorated?		✓	22. Surface movements in valley bottom or on hillside?		
16. Are outlets of decant or underdrains blocked?			23. Water against downstream toe?		✓
17. Cracks or scarps on slopes?			24. Were Photos taken during the dam inspection?	✓	

**Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.**

Inspection Issue #

Comments

In accordance with a January 2011 Clean Air Act settlement agreed to by the Environmental Protection Agency, NIPSCO is required to permanently retire the D.H. Mitchell Generating Station (DHMGs), which has not been operated since 2002. The six coal ash impoundments have not received liquids other than direct precipitation since that time. The minimal amount of liquid in the impoundments is stormwater which can drain through open channels in the embankment. According to NIPSCO, the impoundments will be deconstructed and filled in. During the site assessment on May 25, 2011, it was noted that with the exception of Primary 4, which is incised, the embankments have been breached in order to facilitate the deconstruction of the impoundments and the former NPDES discharge has been removed.

5) Design records and other information were not available at the time of the inspection.

9) Up to 15-inch diameter.

17, 18, 19) Unable to observe due to vegetation on slopes.

**Coal Combustion Waste (CCW)  
Impoundment Inspection**

Impoundment NPDES Permit # N/A INSPECTOR Walter Kosinski, P.E.  
& Thomas Boom, P.E.  
Date May 25, 2011

Impoundment Name D.H. Mitchell Generating Station  
Impoundment Company NIPSCO  
EPA Region 5  
State Agency (Field Office) Addresss N/A

Name of Impoundment Primary 1  
(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New x Update \_\_\_\_\_

	Yes	No
Is impoundment currently under construction?	_____	<u>x</u>
Is water or ccw currently being pumped into the impoundment?	_____	<u>x</u>

**IMPOUNDMENT FUNCTION:** N/A - Generating Station has been shut down since 2002 and is scheduled to be permanently retired.

Nearest Downstream Town: Name N/A - Lake Michigan

Distance from the impoundment \_\_\_\_\_

Impoundment

Location: Longitude 87 Degrees 24 Minutes 22 Seconds  
Latitude 41 Degrees 38 Minutes 24 Seconds  
State IN County Lake

Does a state agency regulate this impoundment? YES \_\_\_\_\_ NO x

If So Which State Agency? N/A

**HAZARD POTENTIAL** (In the event the impoundment should fail, the following would occur):

    x     **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

\_\_\_\_\_ **LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

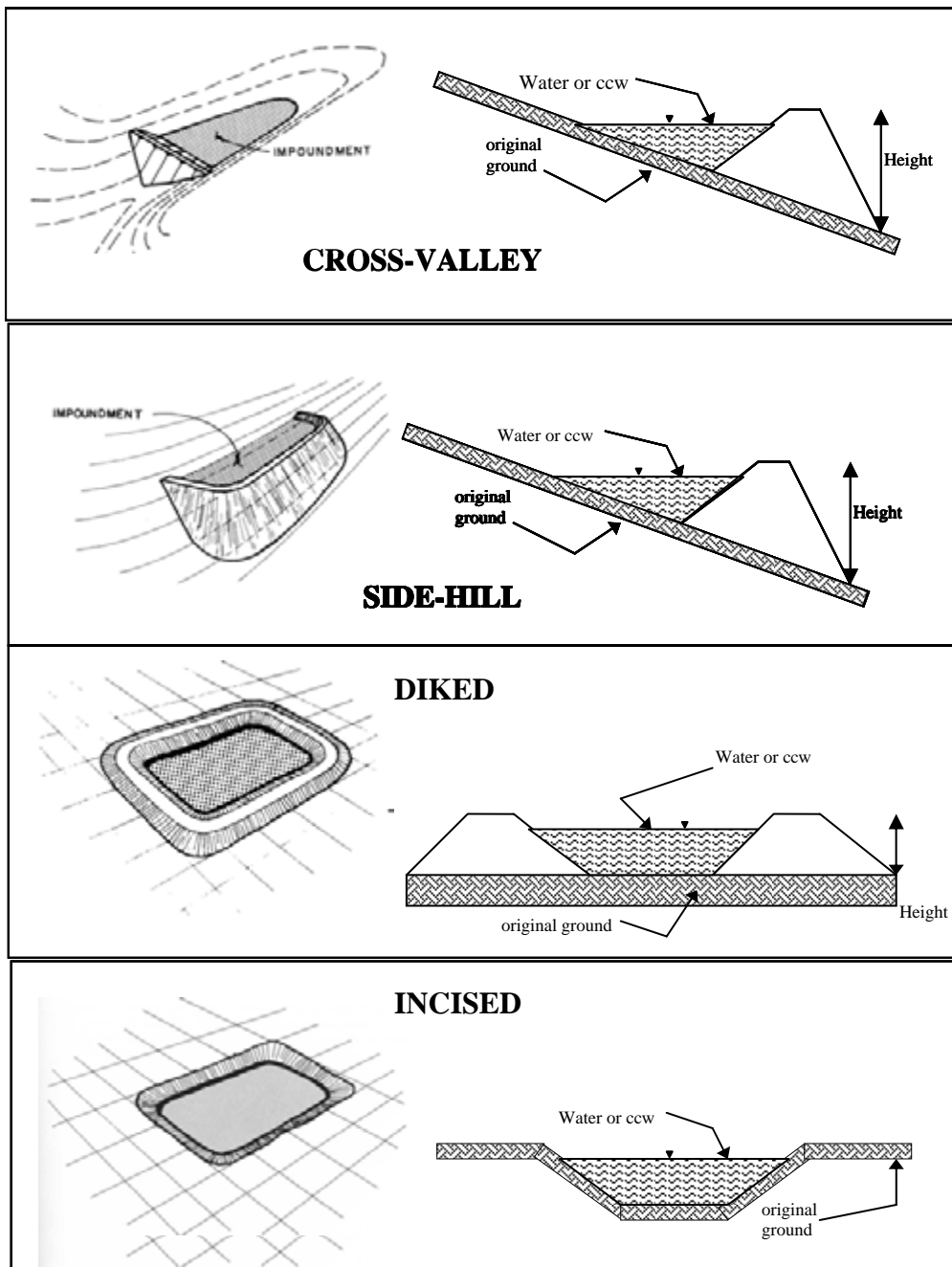
**SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

\_\_\_\_\_ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

**DESCRIBE REASONING FOR HAZARD RATING CHOSEN:**

Given that the DHMGS has been shut down since 2002, the impoundments have been breached which severely restricts their ability to impound water, and they are scheduled for deconstruction and permanent retirement, a less than low hazard rating was selected.

# **CONFIGURATION:**



- ☐ Cross-Valley
- ☐ Side-Hill
- ☒ Diked
- ☐ Incised (form completion optional)
- ☐ Combination Incised/Diked

Embankment Height 12 ft\* +/- feet

Pool Area 1.4 acres

Current Freeboard N/A feet\*

Embankment Material Native soil and clay

Liner None

Liner Permeability N/A

\* Estimated by NIPSCO, design drawings were not available at time of assessment.



**TYPE OF OUTLET** (Mark all that apply)

☒ **Open Channel Spillway**\*

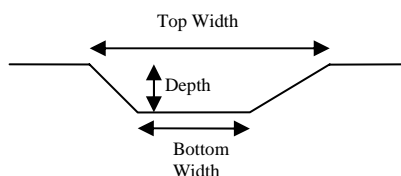
☐ Trapezoidal

☐ Triangular

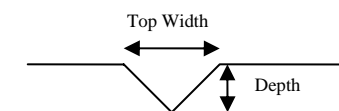
☒ Rectangular

☐ Irregular

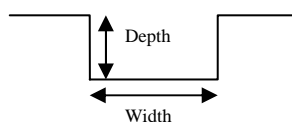
TRAPEZOIDAL



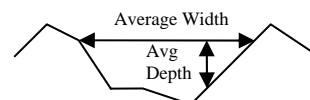
TRIANGULAR



RECTANGULAR



IRREGULAR



12 ft +/- depth

~10 ft +/- bottom (or average) width

☐ top width

\*excavated breach channel

☐ **Outlet**

☐ inside diameter

Material

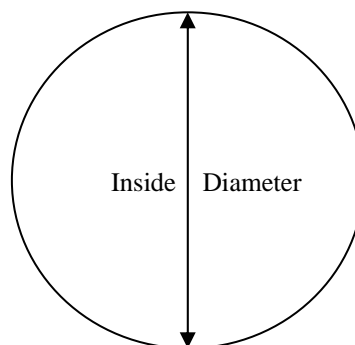
☐ corrugated metal

☐ welded steel

☐ concrete

☐ plastic (hdpe, pvc, etc.)

☐ other (specify) \_\_\_\_\_



Is water flowing through the outlet? YES \_\_\_\_\_ NO ☒

☐ **No Outlet**

☐ **Other Type of Outlet** (specify) \_\_\_\_\_

The Impoundment was Designed By Design drawings and other information  
was not available at the time of the inspection.

US EPA ARCHIVE DOCUMENT

This image shows a single page of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page, leaving small margins at the top and bottom. There are no vertical margin lines or other markings on the page.

US EPA ARCHIVE DOCUMENT

This image shows a single sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

If so, which method (e.g., piezometers, gw pumping,...)? \_\_\_\_\_

If so Please Describe : \_\_\_\_\_

EPA Form XXXX-XXX, Jan 09



Site Name:	D.H. Mitchell Generating Station	Date:	May 25, 2011
Unit Name:	Primary 2	Operator's Name:	NIPSCO
Unit I.D.:	N/A	Hazard Potential Classification:	High Significant Low LTL
Inspector's Name: Walter Kosinski, P.E. & Thomas Boom, P.E.			

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?		N/A	18. Sloughing or bulging on slopes?		
2. Pool elevation (operator records)?		N/A	19. Major erosion or slope deterioration?		
3. Decant inlet elevation (operator records)?		N/A	20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?		N/A	Is water entering inlet, but not exiting outlet?		
5. Lowest dam crest elevation (operator records)?		See Note	Is water exiting outlet, but not entering inlet?		
6. If instrumentation is present, are readings recorded (operator records)?			Is water exiting outlet flowing clear?		
7. Is the embankment currently under construction?		✓	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation, stumps, topsoil in area where embankment fill will be placed)?			From underdrain?		
9. Trees growing on embankment? (If so, indicate largest diameter below)	✓		At isolated points on embankment slopes?		
10. Cracks or scarps on crest?		✓	At natural hillside in the embankment area?		
11. Is there significant settlement along the crest?		✓	Over widespread areas?		
12. Are decant trashracks clear and in place?			From downstream foundation area?		
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		✓	"Boils" beneath stream or ponded water?		
14. Clogged spillways, groin or diversion ditches?		✓	Around the outside of the decant pipe?		
15. Are spillway or ditch linings deteriorated?		✓	22. Surface movements in valley bottom or on hillside?		
16. Are outlets of decant or underdrains blocked?			23. Water against downstream toe?		✓
17. Cracks or scarps on slopes?			24. Were Photos taken during the dam inspection?	✓	

**Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.**

Inspection Issue #

Comments

In accordance with a January 2011 Clean Air Act settlement agreed to by the Environmental Protection Agency, NIPSCO is required to permanently retire the D.H. Mitchell Generating Station (DHMGs), which has not been operated since 2002. The six coal ash impoundments have not received liquids other than direct precipitation since that time. The minimal amount of liquid in the impoundments is stormwater which can drain through open channels in the embankment. According to NIPSCO, the impoundments will be deconstructed and filled in. During the site assessment on May 25, 2011, it was noted that with the exception of Primary 4, which is incised, the embankments have been breached in order to facilitate the deconstruction of the impoundments and the former NPDES discharge has been removed.

5) Design records and other information were not available at the time of the inspection.

9) Up to 15-inch diameter.

17, 18, 19) Unable to observe due to vegetation on slopes.

**Coal Combustion Waste (CCW)  
Impoundment Inspection**

Impoundment NPDES Permit # N/A INSPECTOR Walter Kosinski, P.E.  
Date May 25, 2011 & Thomas Boom, P.E.

Impoundment Name D.H. Mitchell Generating Station  
Impoundment Company NIPSCO  
EPA Region 5  
State Agency (Field Office) Addresss N/A

Name of Impoundment Primary 2  
(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New x Update \_\_\_\_\_

	Yes	No
Is impoundment currently under construction?	_____	<u>x</u>
Is water or ccw currently being pumped into the impoundment?	_____	<u>x</u>

**IMPOUNDMENT FUNCTION:** N/A - Generating Station has been shut down since 2002 and is scheduled to be permanently retired.

Nearest Downstream Town: Name N/A - Lake Michigan

Distance from the impoundment \_\_\_\_\_

Impoundment

Location: Longitude 87 Degrees 24 Minutes 19 Seconds  
Latitude 41 Degrees 38 Minutes 22 Seconds  
State IN County Lake

Does a state agency regulate this impoundment? YES \_\_\_\_\_ NO x

If So Which State Agency? N/A

**HAZARD POTENTIAL** (In the event the impoundment should fail, the following would occur):

    x     **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

**\_\_\_\_\_ LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

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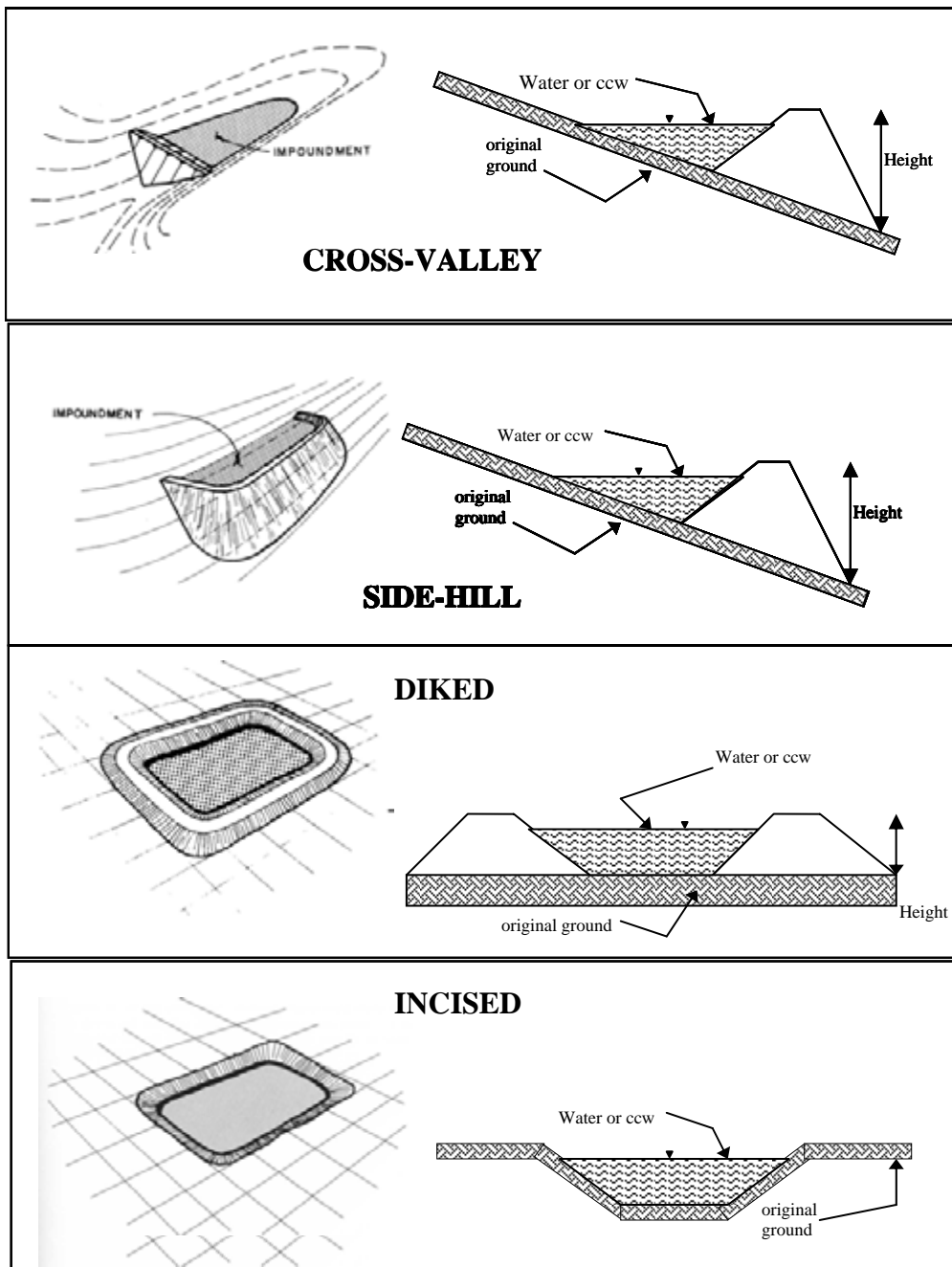
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**DESCRIBE REASONING FOR HAZARD RATING CHOSEN:**

Given that the DHMGS has been shut down since 2002, the impoundments have been breached which severely restricts their ability to impound water, and they are scheduled for deconstruction and permanent retirement, a less than low hazard rating was selected.



# **CONFIGURATION:**



- ☐ Cross-Valley  
☐ Side-Hill  
☒ Diked  
☐ Incised (form completion optional)  
☐ Combination Incised/Diked

Embankment Height 12 ft\* +/- feet

Pool Area 1.7 acres

Current Freeboard N/A feet\*

Embankment Material Native soil and clay

Liner None

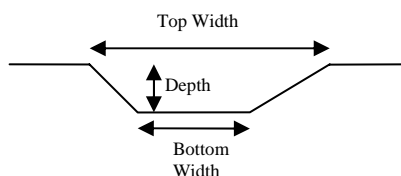
Liner Permeability N/A

\* Estimated by NIPSCO, design drawings were not available at time of assessment.

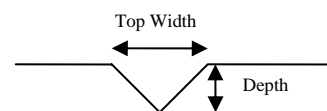
**TYPE OF OUTLET** (Mark all that apply)

- ☒ **Open Channel Spillway** \*
- ☐ Trapezoidal
- ☐ Triangular
- ☒ Rectangular
- ☐ Irregular

TRAPEZOIDAL

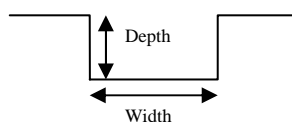


TRIANGULAR

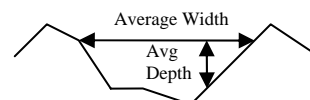


12 ft +/- depth  
 ~10 ft +/- bottom (or average) width  
 \_\_\_\_\_ top width  
 \_\_\_\_\_  
 \*excavated breach channel

RECTANGULAR



IRREGULAR

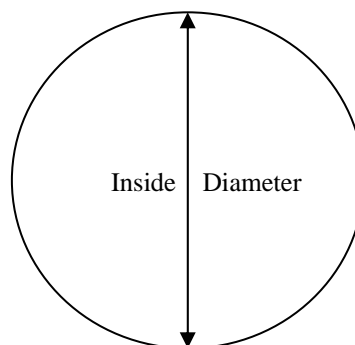


☐ **Outlet**

☐ inside diameter

Material

- ☐ corrugated metal
- ☐ welded steel
- ☐ concrete
- ☐ plastic (hdpe, pvc, etc.)
- ☐ other (specify) \_\_\_\_\_



Is water flowing through the outlet? YES \_\_\_\_\_ NO ☒

☐ **No Outlet**

☐ **Other Type of Outlet** (specify) \_\_\_\_\_

The Impoundment was Designed By Design drawings and other information  
was not available at the time of the inspection.

If So When? \_\_\_\_\_

If So Please Describe : \_\_\_\_\_

EPA Form XXXX-XXX, Jan 09

US EPA ARCHIVE DOCUMENT

[illegible]

If so, which method (e.g., piezometers, gw pumping,...)? \_\_\_\_\_

If so Please Describe : \_\_\_\_\_

EPA Form XXXX-XXX, Jan 09



Site Name:	D.H. Mitchell Generating Station	Date:	May 25, 2011
Unit Name:	Secondary 1	Operator's Name:	NIPSCO
Unit I.D.:	N/A	Hazard Potential Classification:	High Significant Low LTL
Inspector's Name: Walter Kosinski, P.E. & Thomas Boom, P.E.			

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?		N/A	18. Sloughing or bulging on slopes?		
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7. Is the embankment currently under construction?		✓	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
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14. Clogged spillways, groin or diversion ditches?		✓	Around the outside of the decant pipe?		
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16. Are outlets of decant or underdrains blocked?			23. Water against downstream toe?		✓
17. Cracks or scarps on slopes?			24. Were Photos taken during the dam inspection?	✓	

**Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.**

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17, 18, 19) Unable to observe due to vegetation on slopes.

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Impoundment NPDES Permit # N/A INSPECTOR Walter Kosinski, P.E.  
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Impoundment Name D.H. Mitchell Generating Station  
Impoundment Company NIPSCO  
EPA Region 5  
State Agency (Field Office) Addresss N/A

Name of Impoundment Secondary 1  
(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New x Update \_\_\_\_\_

	Yes	No
Is impoundment currently under construction?	_____	<u>x</u>
Is water or ccw currently being pumped into the impoundment?	_____	<u>x</u>

**IMPOUNDMENT FUNCTION:** N/A - Generating Station has been shut down since 2002 and is scheduled to be permanently retired.

Nearest Downstream Town: Name N/A - Lake Michigan  
Distance from the impoundment \_\_\_\_\_

Impoundment

Location: Longitude 87 Degrees 24 Minutes 17 Seconds  
Latitude 41 Degrees 38 Minutes 22 Seconds  
State IN County Lake

Does a state agency regulate this impoundment? YES \_\_\_\_\_ NO x

If So Which State Agency? N/A



**HAZARD POTENTIAL** (In the event the impoundment should fail, the following would occur):

    x     **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

**\_\_\_\_\_ LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

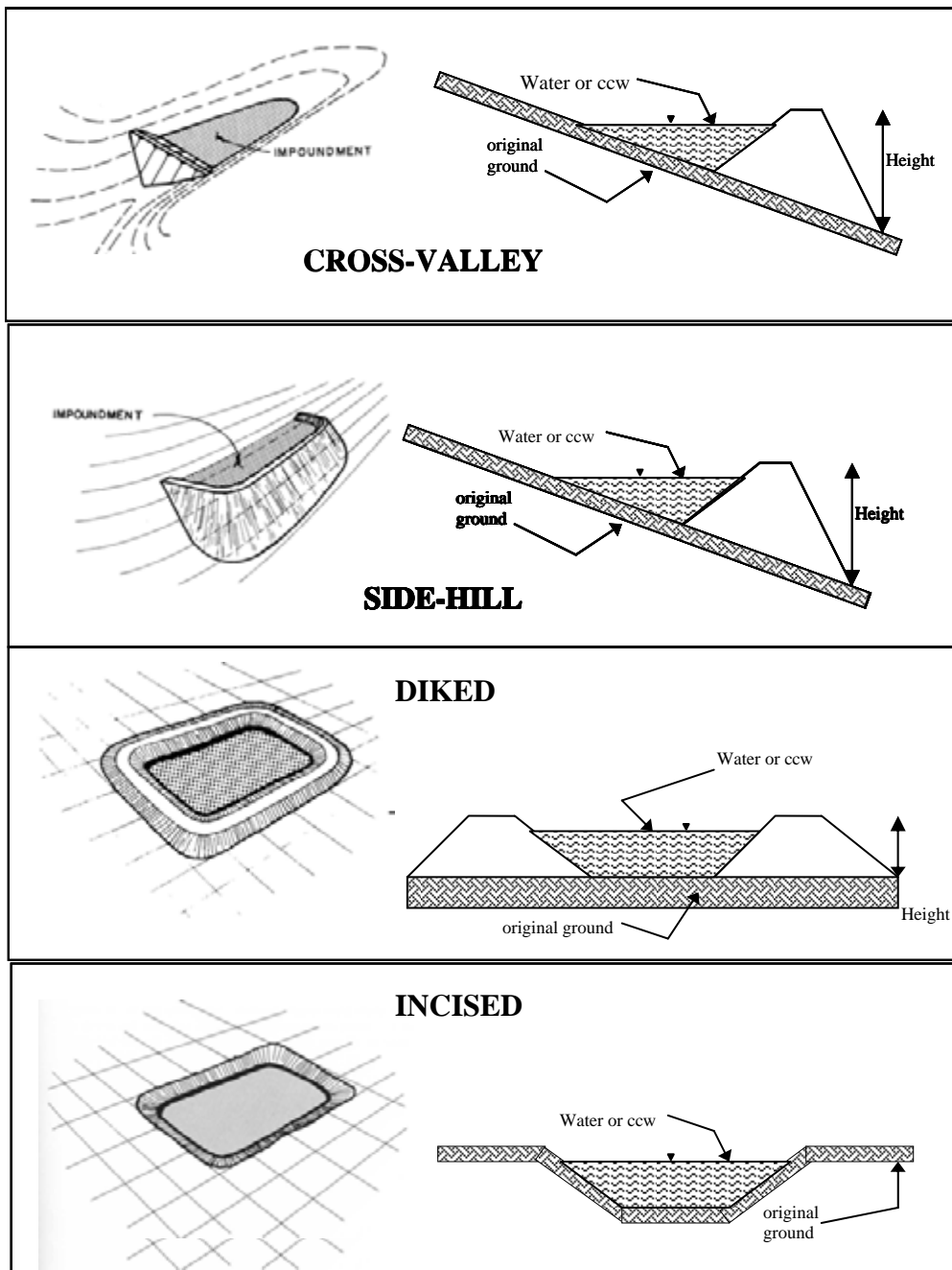
**SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

\_\_\_\_\_ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

**DESCRIBE REASONING FOR HAZARD RATING CHOSEN:**

Given that the DHMGS has been shut down since 2002, the impoundments have been breached which severely restarts their ability to impound water, and they are scheduled for deconstruction and permanent retirement, a less than low hazard rating was selected.

# **CONFIGURATION:**



- ☐ Cross-Valley
- ☐ Side-Hill
- ☒ Diked
- ☐ Incised (form completion optional)
- ☐ Combination Incised/Diked

Embankment Height 12 ft\* +/- feet      Embankment Material Native soil and clay  
 Pool Area 0.52 acres      Liner None  
 Current Freeboard N/A feet\*      Liner Permeability N/A

\*Estimated by NIPSCO, design drawings were not available at time of assessment.

**TYPE OF OUTLET** (Mark all that apply)

☒ **Open Channel Spillway** \*

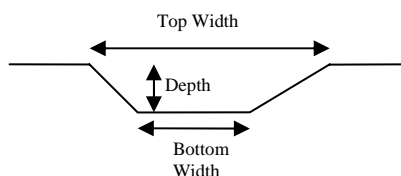
☐ Trapezoidal

☐ Triangular

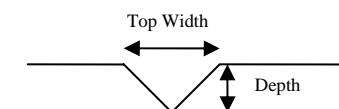
☒ Rectangular

☐ Irregular

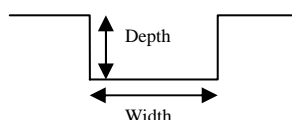
TRAPEZOIDAL



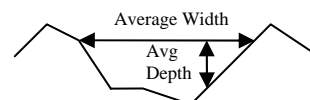
TRIANGULAR



RECTANGULAR



IRREGULAR



12 ft +/- depth  
~10 ft +/- bottom (or average) width  
\_\_\_\_ top width

\*excavated breach channel

☐ **Outlet**

☐ inside diameter

Material

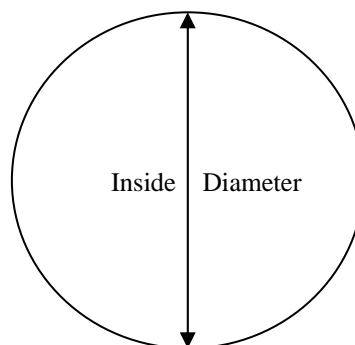
☐ corrugated metal

☐ welded steel

☐ concrete

☐ plastic (hdpe, pvc, etc.)

☐ other (specify) \_\_\_\_\_



Is water flowing through the outlet? YES \_\_\_\_\_ NO ☒

☐ **No Outlet**

☐ **Other Type of Outlet** (specify) \_\_\_\_\_

The Impoundment was Designed By Design drawings and other information  
was not available at the time of the inspection.

US EPA ARCHIVE DOCUMENT

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US EPA ARCHIVE DOCUMENT

[illegible]

If so, which method (e.g., piezometers, gw pumping,...)? \_\_\_\_\_

If so Please Describe : \_\_\_\_\_

EPA Form XXXX-XXX, Jan 09



Site Name:	D.H. Mitchell Generating Station	Date:	May 25, 2011
Unit Name:	Secondary 2	Operator's Name:	NIPSCO
Unit I.D.:	N/A	Hazard Potential Classification:	High Significant Low LTL
Inspector's Name: Walter Kosinski, P.E. & Thomas Boom, P.E.			

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?		N/A	18. Sloughing or bulging on slopes?		
2. Pool elevation (operator records)?		N/A	19. Major erosion or slope deterioration?		
3. Decant inlet elevation (operator records)?		N/A	20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?		N/A	Is water entering inlet, but not exiting outlet?		
5. Lowest dam crest elevation (operator records)?		See Note	Is water exiting outlet, but not entering inlet?		
6. If instrumentation is present, are readings recorded (operator records)?			Is water exiting outlet flowing clear?		
7. Is the embankment currently under construction?		✓	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation, stumps, topsoil in area where embankment fill will be placed)?			From underdrain?		
9. Trees growing on embankment? (If so, indicate largest diameter below)	✓		At isolated points on embankment slopes?		
10. Cracks or scarps on crest?		✓	At natural hillside in the embankment area?		
11. Is there significant settlement along the crest?		✓	Over widespread areas?		
12. Are decant trashracks clear and in place?			From downstream foundation area?		
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		✓	"Boils" beneath stream or ponded water?		
14. Clogged spillways, groin or diversion ditches?		✓	Around the outside of the decant pipe?		
15. Are spillway or ditch linings deteriorated?		✓	22. Surface movements in valley bottom or on hillside?		
16. Are outlets of decant or underdrains blocked?			23. Water against downstream toe?		✓
17. Cracks or scarps on slopes?			24. Were Photos taken during the dam inspection?	✓	

**Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.**

Inspection Issue #

Comments

In accordance with a January 2011 Clean Air Act settlement agreed to by the Environmental Protection Agency, NIPSCO is required to permanently retire the D.H. Mitchell Generating Station (DHMGs), which has not been operated since 2002. The six coal ash impoundments have not received liquids other than direct precipitation since that time. The minimal amount of liquid in the impoundments is stormwater which can drain through open channels in the embankment. According to NIPSCO, the impoundments will be deconstructed and filled in. During the site assessment on May 25, 2011, it was noted that with the exception of Primary 4, which is incised, the embankments have been breached in order to facilitate the deconstruction of the impoundments and the former NPDES discharge has been removed.

5) Design records and other information were not available at the time of the inspection.

9) Up to 15-inch diameter.

17, 18, 19) Unable to observe due to vegetation on slopes.

**Coal Combustion Waste (CCW)  
Impoundment Inspection**

Impoundment NPDES Permit # N/A INSPECTOR Walter Kosinski, P.E.  
Date May 25, 2011 & Thomas Boom, P.E.

Impoundment Name D.H. Mitchell Generating Station  
Impoundment Company NIPSCO  
EPA Region 5  
State Agency (Field Office) Addresss N/A

Name of Impoundment Secondary 2  
(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New x Update \_\_\_\_\_

	Yes	No
Is impoundment currently under construction?	_____	<u>x</u>
Is water or ccw currently being pumped into the impoundment?	_____	<u>x</u>

**IMPOUNDMENT FUNCTION:** N/A - Generating Station has been shut down since 2002 and is scheduled to be permanently retired.

Nearest Downstream Town: Name N/A - Lake Michigan

Distance from the impoundment \_\_\_\_\_

Impoundment

Location: Longitude 87 Degrees 24 Minutes 18 Seconds  
Latitude 41 Degrees 38 Minutes 23 Seconds  
State IN County Lake

Does a state agency regulate this impoundment? YES \_\_\_\_\_ NO x

If So Which State Agency? N/A



**HAZARD POTENTIAL** (In the event the impoundment should fail, the following would occur):

    X     **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

**\_\_\_\_\_ LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

**SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

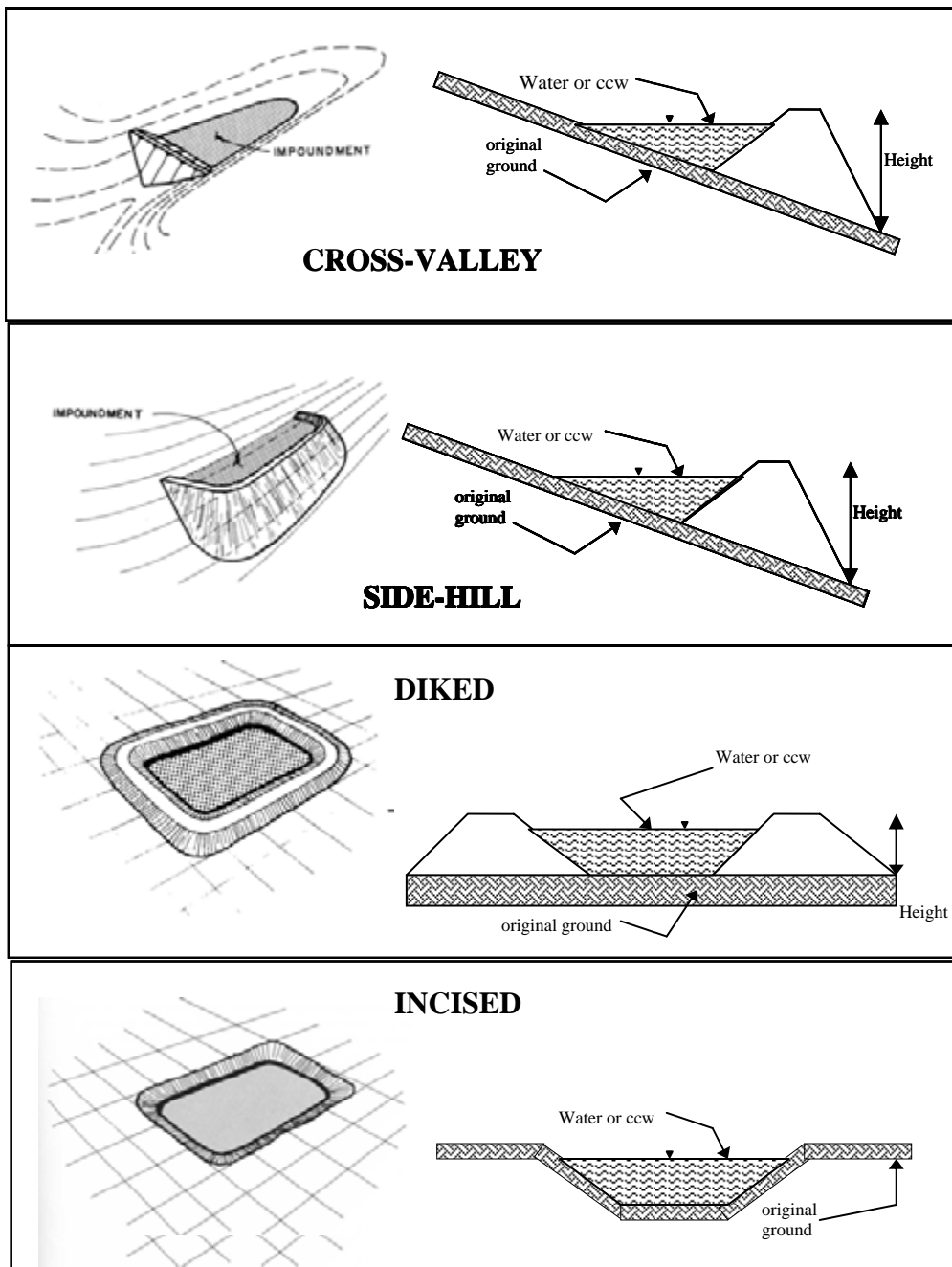
\_\_\_\_\_ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

**DESCRIBE REASONING FOR HAZARD RATING CHOSEN:**

Given that the DHMGS has been shut down since 2002, the impoundments have been breached which severely restricts their ability to impound water and they are scheduled for deconstruction and permanent retirement, a less than low hazard rating was selected.

[illegible]

# **CONFIGURATION:**



- ☐ Cross-Valley
- ☐ Side-Hill
- ☒ Diked
- ☐ Incised (form completion optional)
- ☐ Combination Incised/Diked

Embankment Height 12 ft\* +/- feet      Embankment Material Native soil and clay  
 Pool Area 0.48 acres      Liner None  
 Current Freeboard N/A feet\*      Liner Permeability N/A

\*Estimated by NIPSCO, design drawings were not available at time of assessment.

**TYPE OF OUTLET** (Mark all that apply)

☒ **Open Channel Spillway \***

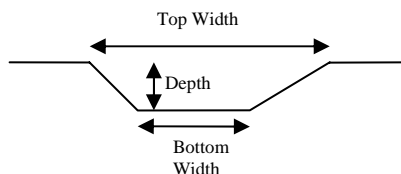
☐ Trapezoidal

☐ Triangular

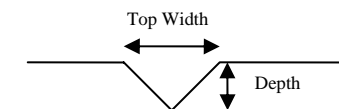
☒ Rectangular

☐ Irregular

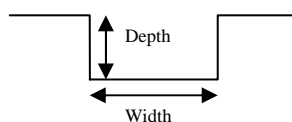
TRAPEZOIDAL



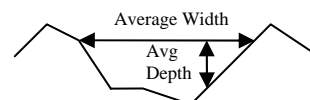
TRIANGULAR



RECTANGULAR



IRREGULAR



12 ft +/- depth  
~10 ft +/- bottom (or average) width  
\_\_\_\_\_ top width

\*excavated breach channel

☐ **Outlet**

☐ inside diameter

Material

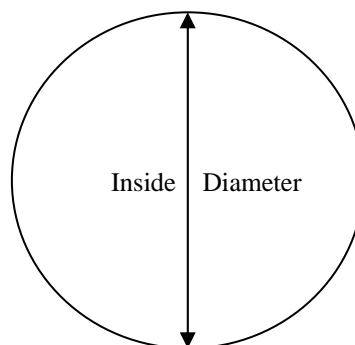
☐ corrugated metal

☐ welded steel

☐ concrete

☐ plastic (hdpe, pvc, etc.)

☐ other (specify) \_\_\_\_\_



Is water flowing through the outlet? YES \_\_\_\_\_ NO ☒

☐ **No Outlet**

☐ **Other Type of Outlet** (specify) \_\_\_\_\_

The Impoundment was Designed By Design drawings and other information  
was not available at the time of the inspection.

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If so, which method (e.g., piezometers, gw pumping,...)? \_\_\_\_\_

If so Please Describe : \_\_\_\_\_

EPA Form XXXX-XXX, Jan 09



Site Name:	D.H. Mitchell Generating Station	Date:	May 25, 2011
Unit Name:	Primary 3	Operator's Name:	NIPSCO
Unit I.D.:	N/A	Hazard Potential Classification:	High Significant Low LTL
Inspector's Name: Walter Kosinski, P.E. & Thomas Boom, P.E.			

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?		N/A	18. Sloughing or bulging on slopes?		
2. Pool elevation (operator records)?		N/A	19. Major erosion or slope deterioration?		
3. Decant inlet elevation (operator records)?		N/A	20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?		N/A	Is water entering inlet, but not exiting outlet?		
5. Lowest dam crest elevation (operator records)?		See Note	Is water exiting outlet, but not entering inlet?		
6. If instrumentation is present, are readings recorded (operator records)?			Is water exiting outlet flowing clear?		
7. Is the embankment currently under construction?		✓	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation, stumps, topsoil in area where embankment fill will be placed)?			From underdrain?		
9. Trees growing on embankment? (If so, indicate largest diameter below)	✓		At isolated points on embankment slopes?		
10. Cracks or scarps on crest?		✓	At natural hillside in the embankment area?		
11. Is there significant settlement along the crest?		✓	Over widespread areas?		
12. Are decant trashracks clear and in place?			From downstream foundation area?		
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		✓	"Boils" beneath stream or ponded water?		
14. Clogged spillways, groin or diversion ditches?		✓	Around the outside of the decant pipe?		
15. Are spillway or ditch linings deteriorated?		✓	22. Surface movements in valley bottom or on hillside?		
16. Are outlets of decant or underdrains blocked?			23. Water against downstream toe?		✓
17. Cracks or scarps on slopes?			24. Were Photos taken during the dam inspection?	✓	

**Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.**

Inspection Issue #

Comments

In accordance with a January 2011 Clean Air Act settlement agreed to by the Environmental Protection Agency, NIPSCO is required to permanently retire the D.H. Mitchell Generating Station (DHMGs), which has not been operated since 2002. The six coal ash impoundments have not received liquids other than direct precipitation since that time. The minimal amount of liquid in the impoundments is stormwater which can drain through open channels in the embankment. According to NIPSCO, the impoundments will be deconstructed and filled in. During the site assessment on May 25, 2011, it was noted that with the exception of Primary 4, which is incised, the embankments have been breached in order to facilitate the deconstruction of the impoundments and the former NPDES discharge has been removed.

5) Design records and other information were not available at the time of the inspection.

9) Up to 15-inch diameter.

17, 18, 19) Unable to observe due to vegetation on slopes.

**Coal Combustion Waste (CCW)  
Impoundment Inspection**

Impoundment NPDES Permit # N/A INSPECTOR Walter Kosinski, P.E.  
Date May 25, 2011 & Thomas Boom, P.E.

Impoundment Name D.H. Mitchell Generating Station  
Impoundment Company NIPSCO  
EPA Region 5  
State Agency (Field Office) Addresss N/A

Name of Impoundment Primary 3  
(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New x Update \_\_\_\_\_

	Yes	No
Is impoundment currently under construction?	_____	<u>x</u>
Is water or ccw currently being pumped into the impoundment?	_____	<u>x</u>

**IMPOUNDMENT FUNCTION:** N/A - Generating Station has been shut down since 2002 and is scheduled to be permanently retired.

Nearest Downstream Town: Name N/A - Lake Michigan

Distance from the impoundment \_\_\_\_\_

Impoundment

Location: Longitude 87 Degrees 24 Minutes 12 Seconds  
Latitude 41 Degrees 38 Minutes 19 Seconds  
State IN County Lake

Does a state agency regulate this impoundment? YES \_\_\_\_\_ NO x

If So Which State Agency? N/A



**HAZARD POTENTIAL** (In the event the impoundment should fail, the following would occur):

    X     **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

**\_\_\_\_\_ LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

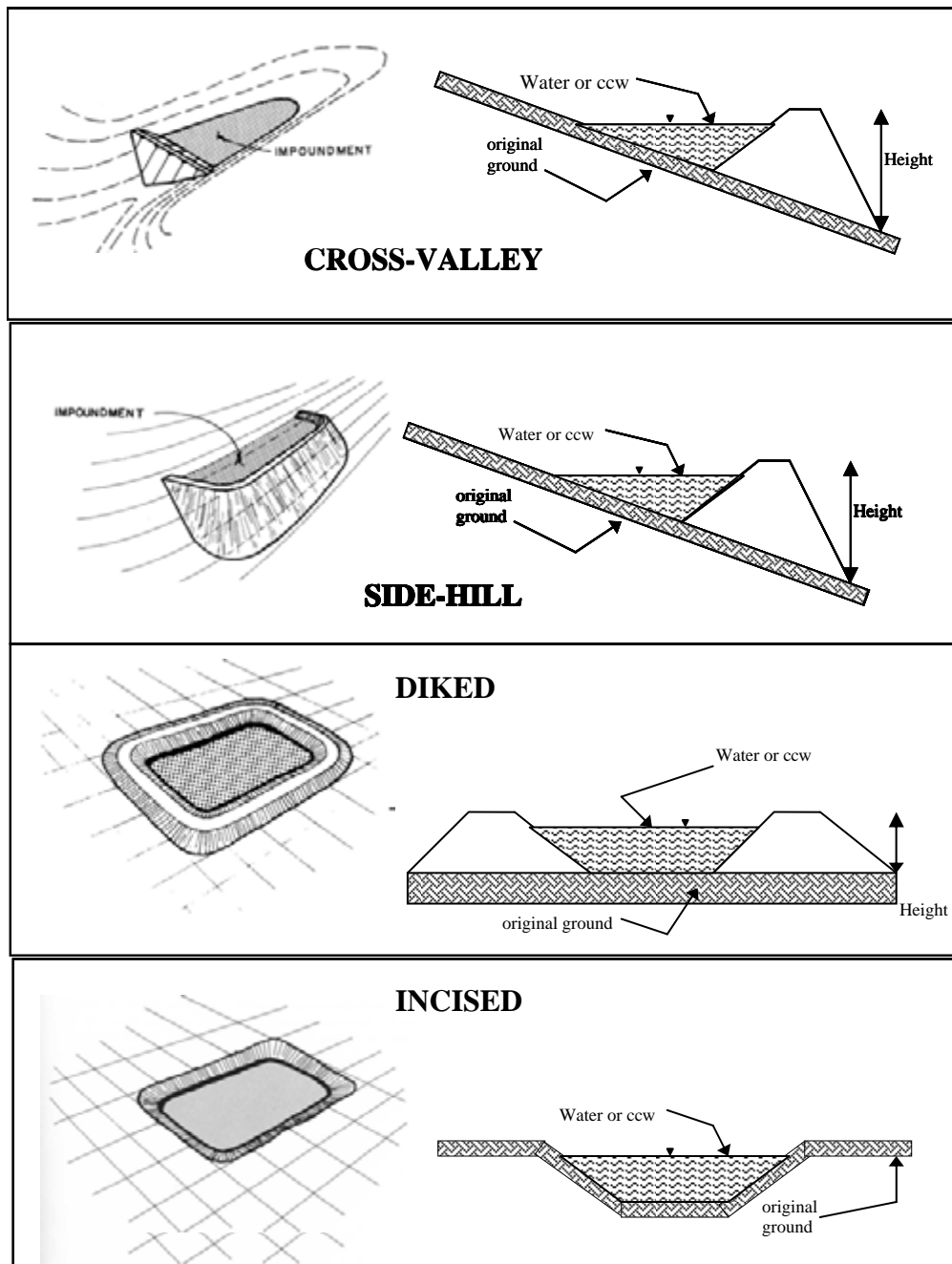
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\_\_\_\_\_ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

**DESCRIBE REASONING FOR HAZARD RATING CHOSEN:**

Given that the DHMGS has been shut down since 2002, the impoundments have been breached which severely restricts their ability to impound water, and they are scheduled for deconstruction and permanent retirement, a less than low hazard rating was selected.

# **CONFIGURATION:**



- ☐ Cross-Valley
- ☐ Side-Hill
- ☒ Diked
- ☐ Incised (form completion optional)
- ☐ Combination Incised/Diked

Embankment Height 12 ft\* +/- feet

Pool Area 1.9 acres

Current Freeboard N/A feet\*

Embankment Material Native soil and clay

Liner None

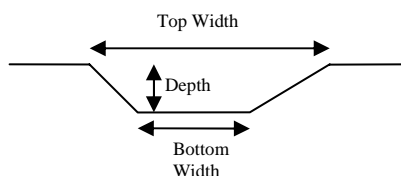
Liner Permeability N/A

\* Estimated by NIPSCO, design drawings were not available at time of assessment.

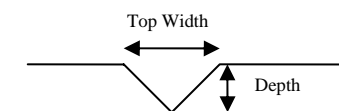
**TYPE OF OUTLET** (Mark all that apply)

- ☒ **Open Channel Spillway** \*
- ☐ Trapezoidal
- ☐ Triangular
- ☒ Rectangular
- ☐ Irregular

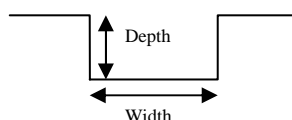
TRAPEZOIDAL



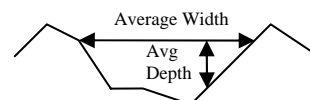
TRIANGULAR



RECTANGULAR



IRREGULAR



12 ft +/- depth  
 ~10 ft +/- bottom (or average) width  
 \_\_\_\_\_ top width

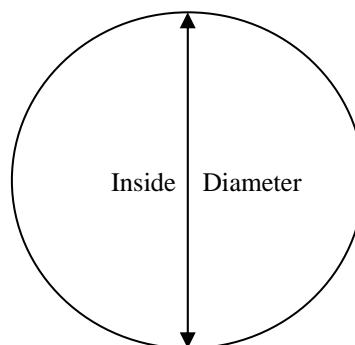
\*excavated breach channel

☐ **Outlet**

☐ inside diameter

Material

- ☐ corrugated metal
- ☐ welded steel
- ☐ concrete
- ☐ plastic (hdpe, pvc, etc.)
- ☐ other (specify) \_\_\_\_\_



Is water flowing through the outlet? YES \_\_\_\_\_ NO \_\_\_\_\_

☐ **No Outlet**

☐ **Other Type of Outlet** (specify) \_\_\_\_\_

The Impoundment was Designed By Design drawings and other information  
was not available at the time of the inspection.

If So When? \_\_\_\_\_

If So Please Describe : \_\_\_\_\_

EPA Form XXXX-XXX, Jan 09

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If so, which method (e.g., piezometers, gw pumping,...)? \_\_\_\_\_

If so Please Describe : \_\_\_\_\_

EPA Form XXXX-XXX, Jan 09



Site Name:	D.H. Mitchell Generating Station	Date:	May 25, 2011
Unit Name:	Primary 4	Operator's Name:	NIPSCO
Unit I.D.:	N/A	Hazard Potential Classification:	High Significant Low LTL
Inspector's Name: Walter Kosinski, P.E. & Thomas Boom, P.E.			

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?		N/A	18. Sloughing or bulging on slopes?		
2. Pool elevation (operator records)?		N/A	19. Major erosion or slope deterioration?		
3. Decant inlet elevation (operator records)?		N/A	20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?		N/A	Is water entering inlet, but not exiting outlet?		
5. Lowest dam crest elevation (operator records)?		See Note	Is water exiting outlet, but not entering inlet?		
6. If instrumentation is present, are readings recorded (operator records)?			Is water exiting outlet flowing clear?		
7. Is the embankment currently under construction?		✓	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation, stumps, topsoil in area where embankment fill will be placed)?			From underdrain?		
9. Trees growing on embankment? (If so, indicate largest diameter below)	✓		At isolated points on embankment slopes?		
10. Cracks or scarps on crest?		✓	At natural hillside in the embankment area?		
11. Is there significant settlement along the crest?		✓	Over widespread areas?		
12. Are decant trashracks clear and in place?			From downstream foundation area?		
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		✓	"Boils" beneath stream or ponded water?		
14. Clogged spillways, groin or diversion ditches?		✓	Around the outside of the decant pipe?		
15. Are spillway or ditch linings deteriorated?		✓	22. Surface movements in valley bottom or on hillside?		
16. Are outlets of decant or underdrains blocked?			23. Water against downstream toe?		✓
17. Cracks or scarps on slopes?			24. Were Photos taken during the dam inspection?	✓	

**Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.**

Inspection Issue #

Comments

In accordance with a January 2011 Clean Air Act settlement agreed to by the Environmental Protection Agency, NIPSCO is required to permanently retire the D.H. Mitchell Generating Station (DHMGs), which has not been operated since 2002. The six coal ash impoundments have not received liquids other than direct precipitation since that time. The minimal amount of liquid in the impoundments is stormwater that can infiltrate the natural sand liner. According to NIPSCO, the impoundments will be deconstructed and filled in. During the site assessment on May 25, 2011, it was noted that with the exception of Primary 4, which is incised, the embankments have been breached in order to facilitate the deconstruction of the impoundments and the former NPDES discharge has been removed.

5) Design records and other information were not available at the time of the inspection.

9) Up to 15-inch diameter.

17, 18, 19) Unable to observe due to vegetation on slopes.

**Coal Combustion Waste (CCW)  
Impoundment Inspection**

Impoundment NPDES Permit # N/A INSPECTOR Walter Kosinski, P.E.  
Date May 25, 2011 & Thomas Boom, P.E.

Impoundment Name D.H. Mitchell Generating Station  
Impoundment Company NIPSCO  
EPA Region 5  
State Agency (Field Office) Addresss N/A

Name of Impoundment Primary 4  
(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New x Update \_\_\_\_\_

	Yes	No
Is impoundment currently under construction?	_____	<u>x</u>
Is water or ccw currently being pumped into the impoundment?	_____	<u>x</u>

**IMPOUNDMENT FUNCTION:** N/A - Generating Station has been shut down since 2002 and is scheduled to be permanently retired.

Nearest Downstream Town: Name N/A - Lake Michigan

Distance from the impoundment \_\_\_\_\_

Impoundment

Location: Longitude 87 Degrees 24 Minutes 05 Seconds  
Latitude 41 Degrees 38 Minutes 15 Seconds  
State IN County Lake

Does a state agency regulate this impoundment? YES \_\_\_\_\_ NO x

If So Which State Agency? N/A

**HAZARD POTENTIAL** (In the event the impoundment should fail, the following would occur):

    X     **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

**\_\_\_\_\_ LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

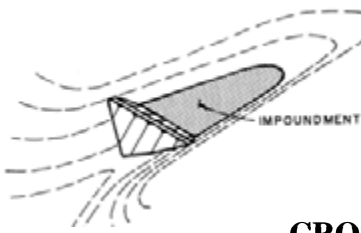
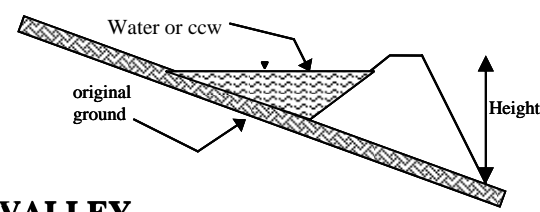
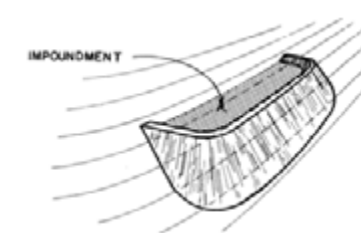
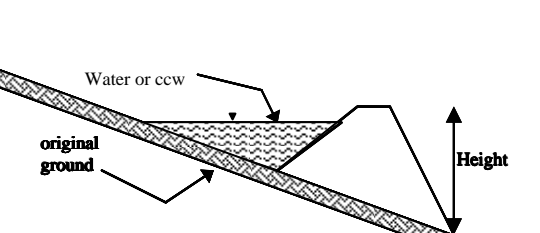
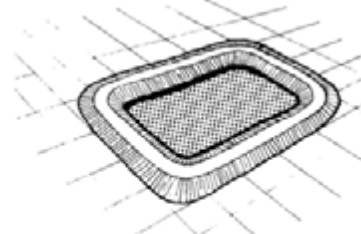
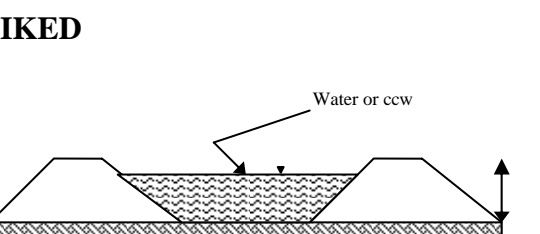
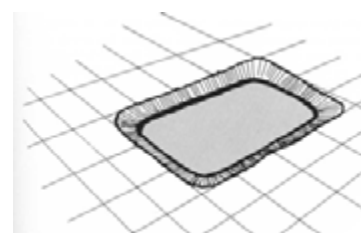
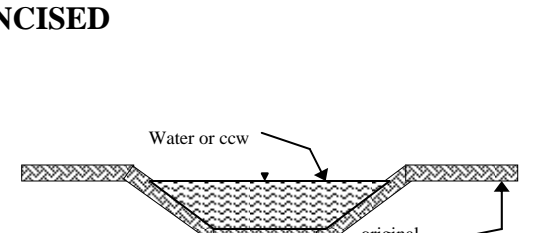
**SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

\_\_\_\_\_ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

**DESCRIBE REASONING FOR HAZARD RATING CHOSEN:**

Given that the DHMGS has been shut down since 2002, Primary 4 is incised, and scheduled for deconstruction and permanent retirement, a less than low hazard rating was selected.

# **CONFIGURATION:**

 <p>IMPOUNDMENT</p>	 <p>Water or ccw</p> <p>original ground</p> <p>Height</p> <p><b>CROSS-VALLEY</b></p>
 <p>IMPOUNDMENT</p>	 <p>Water or ccw</p> <p>original ground</p> <p>Height</p> <p><b>SIDE-HILL</b></p>
	 <p>Water or ccw</p> <p>original ground</p> <p>Height</p> <p><b>DIKED</b></p>
	 <p>Water or ccw</p> <p>original ground</p> <p><b>INCISED</b></p>

- ☐ Cross-Valley  
☐ Side-Hill  
☐ Diked  
☒ Incised (form completion optional)  
☐ Combination Incised/Diked

Embankment Height 0 feet  
 Pool Area 2.3 acres  
 Current Freeboard N/A feet\*

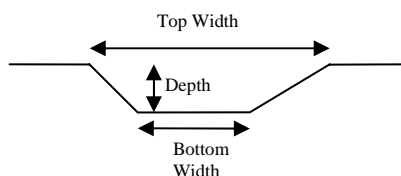
Embankment Material Native soil and clay  
 Liner None  
 Liner Permeability N/A

**TYPE OF OUTLET** (Mark all that apply) N/A

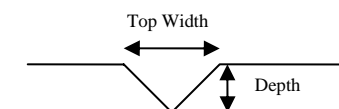
**Open Channel Spillway**

- ☐ Trapezoidal  
☐ Triangular  
☐ Rectangular  
☐ Irregular

TRAPEZOIDAL

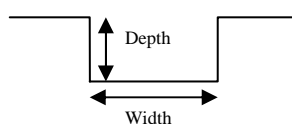


TRIANGULAR

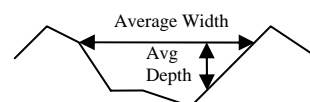


- ☐ depth  
☐ bottom (or average) width  
☐ top width

RECTANGULAR



IRREGULAR

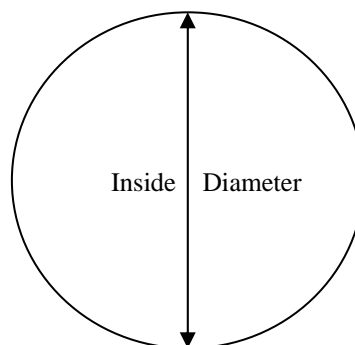


**Outlet**

- ☐ inside diameter

**Material**

- ☐ corrugated metal  
☐ welded steel  
☐ concrete  
☐ plastic (hdpe, pvc, etc.)  
☐ other (specify) \_\_\_\_\_



Is water flowing through the outlet? YES \_\_\_\_\_ NO \_\_\_\_\_

☒ **No Outlet** (incised)

☐ **Other Type of Outlet** (specify) \_\_\_\_\_

The Impoundment was Designed By Design drawings and other information  
was not available at the time of the inspection.



If So When? \_\_\_\_\_

If So Please Describe : \_\_\_\_\_

EPA Form XXXX-XXX, Jan 09

US EPA ARCHIVE DOCUMENT

[illegible]

If so, which method (e.g., piezometers, gw pumping,...)? \_\_\_\_\_

If so Please Describe : \_\_\_\_\_

EPA Form XXXX-XXX, Jan 09



## **Appendix D**

### Photographs



**Client Name:** U.S. Environmental  
Protection Agency

**Site Location:** NIPSCO  
DH Mitchell Generating Station  
Michigan City, Indiana

**Project No.**  
01.0170142.30

**Photo No.**  
**1**

**Date:**  
05/25/11

**Direction Photo  
Taken:**  
Southwest

**Description:**  
Primary Settling Basin No. 1  
with the DHMGS in the  
background.



**Photo No.**  
**2**

**Date:**  
05/25/11

**Direction Photo  
Taken:**  
Northwest

**Description:**  
Primary Settling Basin  
No. 1.







**Client Name:** U.S. Environmental  
Protection Agency

**Site Location:** NIPSCO  
DH Mitchell Generating Station  
Michigan City, Indiana

**Project No.**  
01.0170142.30

**Photo No.**  
**3**

**Date:**  
05/25/11

**Direction Photo  
Taken:**  
Northeast

**Description:**  
Former discharge structure  
in Primary Settling Basin  
No. 1.



**Photo No.**  
**4**

**Date:**  
05/25/11

**Direction Photo  
Taken:**  
Southwest

**Description:**  
Breach in the Primary  
Settling Basin No. 1  
embankment.







**Client Name:** U.S. Environmental  
Protection Agency

**Site Location:** NIPSCO  
DH Mitchell Generating Station  
Michigan City, Indiana

**Project No.**  
01.0170142.30

**Photo No.**  
**5**

**Date:**  
05/25/11

**Direction Photo  
Taken:**  
East

**Description:**  
Outer embankment of  
Primary Settling Basin No.  
1.



**Photo No.**  
**6**

**Date:**  
05/25/11

**Direction Photo  
Taken:**  
North

**Description:**  
Breach between Primary  
Settling Basin No. 1 and  
Secondary Settling Basin  
No. 2.







**Client Name:** U.S. Environmental  
Protection Agency

**Site Location:** NIPSCO  
DH Mitchell Generating Station  
Michigan City, Indiana

**Project No.**  
01.0170142.30

**Photo No.**  
**7**

**Date:**  
05/25/11

**Direction Photo  
Taken:**  
Northeast

**Description:**

Embankment between the  
Primary Settling Basin No. 2  
(to the right of the  
photograph) and the  
Secondary Settling Basin  
No. 2 (to the left of the  
photograph).



**Photo No.**  
**8**

**Date:**  
05/25/11

**Direction Photo  
Taken:**  
East

**Description:**

Former discharge structure  
in the Primary Settling Basin  
No. 2.







**Client Name:** U.S. Environmental  
Protection Agency

**Site Location:** NIPSCO  
DH Mitchell Generating Station  
Michigan City, Indiana

**Project No.**  
01.0170142.30

**Photo No.**  
**9**

**Date:**  
05/25/11

**Direction Photo  
Taken:**  
West

**Description:**  
Primary Settling Pond No. 2.



**Photo No.**  
**10**

**Date:**  
05/25/11

**Direction Photo  
Taken:**  
South

**Description:**  
Ash remaining in Primary  
Settling Basin No. 2.







**Client Name:** U.S. Environmental  
Protection Agency

**Site Location:** NIPSCO  
DH Mitchell Generating Station  
Michigan City, Indiana

**Project No.**  
01.0170142.30

**Photo No.**  
**11**

**Date:**  
05/25/11

**Direction Photo  
Taken:**  
Southeast

**Description:**

Breach between the Primary  
Settling Pond No. 2 and  
Secondary Settling Pond No.  
2.



**Photo No.**  
**12**

**Date:**  
05/25/11

**Direction Photo  
Taken:**  
South

**Description:**

Primary Settling Pond No. 3.





**Client Name:** U.S. Environmental  
Protection Agency

**Site Location:** NIPSCO  
DH Mitchell Generating Station  
Michigan City, Indiana

**Project No.**  
01.0170142.30

**Photo No.**  
**13**

**Date:**  
05/25/11

**Direction Photo  
Taken:**  
Southwest

**Description:**  
Breach in Primary Settling  
Pond No. 3.



**Photo No.**  
**14**

**Date:**  
05/25/11

**Direction Photo  
Taken:**  
East

**Description:**  
Northern embankment in  
Primary Settling Pond No. 3.







**Client Name:** U.S. Environmental  
Protection Agency

**Site Location:** NIPSCO  
DH Mitchell Generating Station  
Michigan City, Indiana

**Project No.**  
01.0170142.30

**Photo No.**  
**15**

**Date:**  
05/25/11

**Direction Photo  
Taken:**  
South

**Description:**  
Overview of Primary  
Settling Pond No. 4.



**Photo No.**  
**16**

**Date:**  
05/25/11

**Direction Photo  
Taken:**  
West

**Description:**  
Embankment retaining wall  
between Primary Settling  
Pond No. 4 and the US Steel  
settling pond.







**Client Name:** U.S. Environmental  
Protection Agency

**Site Location:** NIPSCO  
DH Mitchell Generating Station  
Michigan City, Indiana

**Project No.**  
01.0170142.30

**Photo No.**  
**17**

**Date:**  
05/25/11

**Direction Photo  
Taken:**  
Northwest

**Description:**  
Overview of Secondary  
Settling Basin No. 1.



**Photo No.**  
**18**

**Date:**  
05/25/11

**Direction Photo  
Taken:**  
South

**Description:**  
Secondary Settling Pond No.  
1. The breach between  
Secondary Settling Pond No.  
2 and Secondary Settling  
Pond No. 1 is shown on the  
right side of the photograph.







**Client Name:** U.S. Environmental  
Protection Agency

**Site Location:** NIPSCO  
DH Mitchell Generating Station  
Michigan City, Indiana

**Project No.**  
01.0170142.30

**Photo No.**  
**19**

**Date:**  
05/25/11

**Direction Photo  
Taken:**  
South

**Description:**

The breach between  
Secondary Settling Pond No.  
2 and Secondary Settling  
Pond No. 1.



**Photo No.**  
**20**

**Date:**  
05/25/11

**Direction Photo  
Taken:**  
Southeast

**Description:**

Former discharge structure  
in Secondary Settling Pond  
No. 1.







**Client Name:** U.S. Environmental  
Protection Agency

**Site Location:** NIPSCO  
DH Mitchell Generating Station  
Michigan City, Indiana

**Project No.**  
01.0170142.30

**Photo No.**  
**21**

**Date:**  
05/25/11

**Direction Photo  
Taken:**  
North

**Description:**

Breach between the Primary  
Settling Pond No. 2 and  
Secondary Settling Pond No.  
2.



**Photo No.**  
**22**

**Date:**  
05/25/11

**Direction Photo  
Taken:**  
Northeast

**Description:**

Overview of Secondary  
Settling Pond No. 2.







**Client Name:** U.S. Environmental  
Protection Agency

**Site Location:** NIPSCO  
DH Mitchell Generating Station  
Michigan City, Indiana

**Project No.**  
01.0170142.30

**Photo No.**  
**23**

**Date:**  
05/25/11

**Direction Photo  
Taken:**  
Southeast

**Description:**  
Overview of Secondary  
Settling Pond No. 2.



**Photo No.**  
**24**

**Date:**  
05/25/11

**Direction Photo  
Taken:**  
Northwest

**Description:**  
Former location of NPDES  
discharge.





## **Appendix E**

### References

## NIPSCO – DH MITCHELL GENERATING STATION

### REFERENCES

1. October 4, 2010 response by NIPSCO to EPA (5306P) Request for Information regarding the D.H. Mitchell Generating Station.

j:\01.xx norwood\01.0170142.30 ccw dams round 10\nipsco\_dean h mitchell\draft report\appendices\appendix e\_references - mitchell.docx